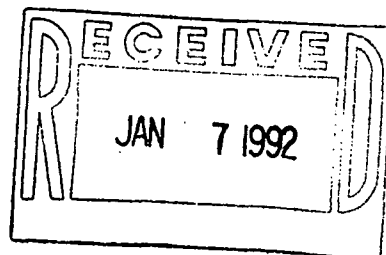




Minnesota Pollution Control Agency

520 Lafayette Road, Saint Paul, Minnesota 55155-3898

Telephone (612) 296-6300



January 2, 1992



Mr. Neil Ahlstrom, President
Smith Foundry
1855 East 28th Street
Minneapolis, Minnesota 55407

Dear Mr. Ahlstrom:

Enclosed is Air Emission Permit No. 137-91-OT-1 for operation of your gray and ductile iron foundry in Minneapolis, Hennepin County, Minnesota. The permit is effective for five years starting from the date of issuance of the amendment.

Please review the permit and familiarize yourself with the conditions and requirements included. The permit should be distributed to appropriate staff and posted at the facility where appropriate.

Air quality permit processing fees are not currently being charged. In accordance with the 1990 Clean Air Act Amendments and 1991 Minnesota legislation, the fee rules are being amended to collect fees from facilities based on their air pollutant emissions. Emergency rules will be in effect for state fiscal year 1992 (July 1, 1991 - June 30, 1992), and permanent rules will be effective in state fiscal year 1993 and thereafter. If the emergency fee rule affects your facility, you will be notified by mail of the emission fee that will be due.

If you have any questions, please contact me at (612)296-7767.

Sincerely,

Barbara Conti

Barbara J. Conti
Engineer, Permit Unit I
Air Quality Division

BJC:jeh

Enclosure

cc: Scott Parr, AQD
AQD File No. 137

Smith Foundry Company

Air Emission Permit No. 137-91-OT-1 Dated January 2, 1992

Page 5 & 6 of 12

1.2.6 Emission Point No. 6 - Facility I.D. Shakeout

Existing Emission Unit - Same/No Changes

Existing Control Equipment Type: Wet Type Collector
Mfr: American Air Filter
Model: Type N, Model B
Size: 12
Gas Volume (ACFM): 14,000
Throat Pressure Drop: 7.5" H₂O
Type Blower: AAF - Size 33, Type K
Efficiency: TSP-99, PM10-95
Date of Installation: 1979



Existing Monitoring Equipment - None

Existing Stack Parameters Height: 35 feet
Inside Exit Dia.: 1.5 ft.
Flow Rate ACFM: 6,000 @ Room Temperature

Replacement Control Equipment Type: Baghouse
Mfr: Carborundum
Model: 150 M10-CP-3
Number of Bags: 150 (4" dia. x 10'-0" long)
Filter Area: 1570 sq. ft.
Air to Cloth Ratio: 7.64:1
Type Blower: Cincinnati HDBI-240
Gas Volume: 12,000 cfm @ 10" S.P.
Blower H.P.: 40
Efficiency: 99A%
Expected Pressure Drop: 4" H₂O
Date of Installation: 1994

Replacement Monitoring Equipment - Photohelic/Pulse Panel/Gauge

Replacement Stack Parameters Height: 46 feet
Inside Exit Diameter: 2.08 feet
Flow Rate, ACFM: 12,000 Room Temperature

AIR EMISSION
PERMIT NO. 137-91-OT-1
FOR A
GRAY AND DUCTILE IRON FOUNDRY
AND
AIR POLLUTION CONTROL EQUIPMENT

According to Minnesota Statutes Chapters 115 and 116 and Minnesota Rules Chapters 7001, 7005 and 7010

SMITH FOUNDRY
1855 East 28th Street
Minneapolis, Minnesota 55407

(hereinafter Permittee) is issued an Air Emission Permit by the Minnesota Pollution Control Agency (hereinafter Agency) for its facility located at the above address in Minneapolis, Hennepin County, Minnesota. The permit authorizes operation of the stationary source and air pollution control equipment under the conditions set forth herein.

This permit is effective for a term of five years starting on the date issued by the Commissioner.

DATED: January 2, 1992

Lisa J. Thorvig
Division Manager
Air Quality Division

for Charles W. Williams
Commissioner
Minnesota Pollution Control Agency

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1.0 FACILITY DESCRIPTION

1.1 Overview

1.1.1 Description of the Source

The Permittee operates a gray and ductile iron foundry. Typically, the foundry operation is 8 hours per day, 5 days per week, and 49 weeks per year.

An electric induction furnace is used to melt the iron. Sand molds and cores are made on site. Charges are poured in two parts of the plant, by an automated system for large jobs and by hand pouring for small jobs. The charges are poured into sand molds and allowed to cool and solidify. All castings, sand molds, and cores are separated in a shakeout area. Used sand is cleaned and re-used. The castings are treated with shotblasting and grinding operations to remove burrs, gates, and flash.

1.1.2 Applicability of Federal Rules

The facility is not one of the 28 industrial source categories listed in the federal Prevention of Significant Deterioration of Air Quality (40 CFR 52.21) as major if the potential-to-emit is equal to or greater than 100 tons per year of any single criteria pollutant.

There are no federal Standards of Performance for New Stationary Sources (40 CFR 60) which are applicable to this facility.

1.2 Emission Sources

The emission units, air pollution control equipment and monitoring equipment at the stationary source described above include the following:

1.2.1 Emission Point No. 1 Facility I.D. Furnace

Emission Unit -	Type:	Electric Induction Furnace
	Mfr.:	Inductotherm
	Melting Rate:	4 tons/hr
	Capacity:	8 tons
	Melting Rating:	2,000 kW
	Date of Installation:	1979

Control Equipment - none

Monitoring Equipment - none

Stack Parameters -	Height:	25 ft
	Inside Exit Diameter:	3 ft
	Flow Rate, acfm	
	(for primary fuel):	3000 @ 140°F

1.2.4 Emission Point No. 4 Facility I.D. Core Ovens

Emission Unit - 1. Type: Core Oven
 Mfr.: Dispatch
 Model: Special RS Gas Fired Oven
 Rated Heat Input: 0.35 MMBtu/hr
 Fuel: Natural Gas
 Date of Installation: 1966

 2. Type: Core Oven
 Mfr.: Dispatch
 Model: Special RS Type Batch Oven
 Rated Heat Input: 0.35 MMBtu/hr
 Fuel: Natural Gas
 Date of Installation: 1967

Control Equipment - None

Monitoring Equipment - None

Stack Parameters - Height: 20 ft
 Inside Exit Diameter: 0.7 ft
 Flow Rate, acfm
 (for primary fuel): 321 @ 150°F

1.2.5 Emission Point No. 5 Facility I.D. Charge Handling (Automated Area)

Emission Unit - Type: Casting/Pouring

Control Equipment - none

Monitoring Equipment - none

Stack Parameters - Height: 25 ft
 Inside Exit Diameter: 1 ft
 Flow Rate, acfm: 1000 @ 250°F

1.2.6 Emission Point No. 6 Facility I.D. Shakeout

Emission Unit - Type: Shakeout Machine
 Mfr.: Didion
 Model: Rotary Drum Shakeout
 Date of Installation: 1985

Control Equipment - Type: Wet type Collector
 Mfr.: American Air Filter
 Model: Type N, Model B
 Size: 12
 Gas Volume (acfm): 14,000
 Throat Pressure Drop: 7.5 inches of water

Type Blower: AAF- Size 23, Type K
Efficiency: TSP - 99, PM10 - 95
Date of Installation: 1979

Monitoring Equipment - none

Stack Parameters - Height: 35 ft
Inside Exit Diameter: 1.5 ft
Flow Rate, acfm: 6000 @ room ambient

1.2.7 Emission Point No. 7 Facility I.D. Shot Blasting, Cleaning

Emission Unit - Type: Shot Blaster
Mfr.: Wheelabrator-Frye
Date of Installation: 1982

Control Equipment - Type: Baghouse
Mfr.: Jetson Iron Works
Model: 3750 CFM
Number of Bags: 150
Filter Area: 1635 sq ft
Air to Cloth Ratio: 2.0 t 1
Efficiency: 99%
Expected Pressure Drop: 2 inches of water
Date of Installation: 1982

Monitoring Equipment - Magnahelic Gauge

Stack Parameters - Height: 25 ft
Inside Exit Diameter: 1.3 ft
Flow Rate, acfm: 6000 @ room ambient

1.2.8 Emission Point No. 8 Facility I.D. Hand Grinders

Emission Unit - Type: Grinder (8)
Mfr.: Setco
Model: 30 in. single pedestal
Date of Installation: 1982

Control Equipment - Type: Baghouse
Mfr.: Jetson Iron Works
Model: 10,000 CFM
Number of bags: 364
Filter Area: 4306 sq ft
Air to Cloth Ratio: 2.0 to 1
Efficiency: 99%
Expected Pressure Drop: 2 inches of water
Date of Installation: 1982

Monitoring Equipment - Magnahelic Gauge

Stack Parameters - Height: 15 ft
 Inside Exit Diameter: 1.5 ft
 Flow Rate, acfm: 5000 @ room ambient

The following operations occur at the facility but are not vented directly to the atmosphere: core machines, job shop area pouring/casting, and casting cooling.

1.3 Definitions & Abbreviations

Definition of terms and abbreviations used in this permit may be found in Minn. Rules pts. 7005.0100 and 7005.0110 respectively and as defined below:

Emission Point:	The stack, chimney, vent or other functionally equivalent opening whereby emissions are exhausted to the atmosphere.
lb:	pound
gr:	Grain (1/7000th pound)
dscf:	Dry standard cubic foot
MMBtu:	Million British thermal unit
hr:	Hour
scfm:	Standard cubic feet per minute
acfm:	Actual cubic feet per minute
ft:	Feet
sq ft:	Square feet
hr:	Hour
gpm:	Gallons per minute

2.0 SPECIAL CONDITIONS

The Permittee shall comply with the following special conditions in order to attain, maintain and demonstrate compliance with applicable Minnesota and federal statutes, federal regulations and Minnesota rules.

2.1 Ambient Standards

The Permittee shall comply with Minn. Rules pts. 7005.0010-7005.0080, State Ambient Air Quality Standards, and with National Primary and Secondary Ambient Air Quality Standards, 40 CFR Part 50.

2.2 Emission Limits

The Permittee shall not discharge into the atmosphere pollutants in excess of the limits listed below:

2.2.1 Particulates

2.2.1.1 Particulate Matter

<u>Emission Point Nos.</u>	<u>Emission Limit</u>	<u>Limitation Basis</u>
1	Variable with process but not to exceed 8.48 lb/hr at rated capacity	Minn. Rules pt. 7005.0480 subp. 1.A.
4	Variable with process but not to exceed 0.1 gr/dscf at rated capacity	Minn. Rules pt. 7005.2770 subp. 1.A.(1)
2, 3, 6, 7, 8	Variable with process but not to exceed 0.1 gr/dscf at rated capacity	Minn. Rules pt. 7005.0480 subp. 1.A.

2.2.1.2 Particulate Matter less than 10 um in size (PM-10)

<u>Emission Point Nos.</u>	<u>Emission Limit</u>	<u>Limitation Basis</u>
1	Variable with process but not to exceed 8.48 lb/hr at rated capacity	Minn. Rules pt. 7005.0480, subp. 1.A.
4	Variable with process but not to exceed 0.1 gr/dscf at rated capacity	Minn. Rules pt. 7005.2770, subp. 1.A.
2, 3, 6, 7, 8	Variable with process but not to exceed 0.1 gr/dscf at rated capacity	Minn. Rules pt. 7005.0480, subp. 1.A.

2.2.1.3 Opacity

<u>Emission Point Nos.</u>	<u>Emission Limit</u>	<u>Limitation Basis</u>
1 - 3 6 - 8	Not greater than 20% opacity except that a maximum of 60% opacity shall be permissible for 4 minutes in any 60 minute period and a maximum of 40% opacity shall be permissible for 4 additional minutes in any 60 minute period	Minn. Rules pt. 7005.0480 subp. 1.B.

4

Not greater than 20% opacity except that a maximum of 60% opacity shall be permissible for 4 minutes in any 60 minute period and a maximum of 40% opacity shall be permissible for 4 additional minutes in any 60 minute period

Minn. Rules pt. 7005.2770
subp. 1.A.(2)

2.2.3 Noise

The Permittee shall comply with the noise standards set forth in Minn. Rules pts. 7010.0010 to 7010.0080 at all times during the operation of all emissions units.

2.2.4 Odor

The Permittee shall not discharge into the atmosphere from any emission unit or combination of emission units within the facility any gases which contain odors in excess of the amount allowed by Minn. Rules pt. 7005.0920.

2.3 Operational Requirements

The Permittee shall meet the following operational requirements. Records of any operational parameters that are recorded as directed below shall be retained for at least three years, after which time this period may be extended as advised in writing by the Division Manager.

2.3.1 Shutdowns and Breakdowns

2.3.1.1 Shutdown

The owner or operator of an emission facility shall notify the Division Manager at least 24 hours in advance of shutdown of any control equipment and, if the shutdown would cause an increase in the emission of air contaminants, of a shutdown of any process equipment. At the time of notification, the owner or operator shall also notify the Division Manager of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Division Manager when the shutdown is over.

2.3.1.2 Breakdown

In accordance with Minn. Rules pt. 7005.1880, subp. 2, the owner or operator of an emission facility shall notify the Division Manager immediately of a breakdown of more than one hour duration of any control equipment and, if the breakdown causes an increase in the emission of air contaminants, of a breakdown of any process equipment. At the time of notification or as soon thereafter as possible, the owner or operator shall also notify the Division Manager of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Division Manager when the breakdown is over.

2.3.1.3 Operation Changes

In any shutdown or breakdown covered by subp. 1 or 2, the owner or operator shall immediately take all practical steps to modify operations to reduce the emission of air contaminants. The Division Manager may require feasible and practical modifications in the operation to reduce emissions of air contaminants. No affected facility which has an unreasonable breakdown frequency of control equipment shall be permitted to operate. Nothing in this part shall permit the operation of an affected facility which may cause an immediate public health hazard.

2.3.1.4 Monitoring Equipment

The owner or operator of a continuous monitoring system or monitoring device shall notify the Division Manager of any breakdown or malfunction of such system or device.

2.3.2 Operation and Maintenance Plan

2.3.2.1 Monitoring Requirements

The Permittee shall provide or install within sixty (60) days of permit issuance, operate and maintain instrumentation to measure the pressure differential across each baghouse. The Permittee shall observe and record once each operating day the pressure drop across each baghouse.

2.3.2.2 Maintenance Plan

The Permittee shall inspect and record the condition of control equipment once each week using the attached form. If a problem is noted during any inspection, the problem shall be described on the form and corrective action shall be initiated within 24 hours. The Permittee shall have available adequate inventories of manufacturer's recommended replacement parts for all control equipment. The Permittee shall maintain all alarm systems, lights, and other indicators of the effective operation of the control equipment such that the indicators operate efficiently at all times.

2.4 Fugitive Emissions

The Permittee shall not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne.

The Permittee shall not cause or permit a building or its appurtenances or a road, or a driveway, or an open area to be constructed, used, repaired, or demolished without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne. The Division Manager may require such reasonable measures as may be necessary to prevent particulate matter from becoming airborne including, but not limited to, paving or frequent clearing of roads, driveways, and parking lots; application of dust-free surfaces; application of water; and the planting and maintenance of vegetative ground cover. (Minn. Rules pt. 7005.0550). The Permittee should note, it is unlawful to place used oil in or on the land, unless approved by the Agency in accordance with Minn. Stat. § 115A.916.

2.5 Compliance Demonstration

The Permittee shall demonstrate compliance with applicable permit conditions, Minnesota and federal statutes, federal regulations and Minnesota rules by the following methods, and in accordance with the applicable Exhibits:

<u>Emission Point Nos.</u>	<u>Compliance Determination Method</u>	<u>Pollutant</u>	<u>Frequency</u>	<u>Special Condition and/or Exhibit</u>
1-4, 6-8	Stack Test	TSP	As requested by Division Manager and once at least 90 days prior to permit expiration	C
1-4, 6-8	Stack Test	Opacity	As requested by Division Manager and once at least 90 days prior to permit expiration	C

The Permittee shall notify the Division Manager at least fifteen (15) working days prior to conducting the performance tests to confirm testing date and to schedule a pretest meeting. The Permittee shall notify the Division Manager of preliminary results of the performance tests within ten (10) days after completion of testing, and shall submit a test report to the Division Manager within thirty (30) days after completion of testing.

2.6 Residual Materials

The Permittee shall dispose of particulates, sludges, or other wastes generated by the operation of any emission unit(s) and/or air pollution control equipment according to solid waste rules (Minn. Rules ch. 7035) and hazardous waste rules (Minn. Rules ch. 7045). The Permittee shall contain and dispose of scrubber water according to water quality rules (Minn. Rules pts. 7050, 7056, 7060 and 7065).

3.0 SUBMITTALS SUMMARY

The Permittee is required by previous parts or Special Conditions of this permit to submit to the Agency the following reports and/or other documents according to the schedules identified below.

The Agency may grant extension of time schedules stated herein if requests for extensions are submitted in a timely fashion and good cause exists for granting the extension. All extensions must be requested by the Permittee in writing. The request shall specify the reason(s) why the extension is needed. Extensions shall only be granted for such period of time as the Division Manager or MPCA Board determines is reasonable under the circumstances. A requested extension shall not be effective until approved by the Division Manager or MPCA Board.

Reports

Schedule

Required By:

Notification
stack emissions
test date

Not later than 15 days
prior to test

Special Condition
2.5

Stack emissions
test, emission
point 1-4,
6-8

As requested by Division
Manager and once at least
90 days prior to permit
expiration

Special Condition
2.5

Stack emission
test report

Not later than 30 days
after test

Special Condition
2.5

4.0 GENERAL CONDITIONS

The Permittee shall comply with the attached general conditions, attached as Exhibit A, in order to attain, maintain and demonstrate compliance with applicable Minnesota and federal statutes, federal regulations and Minnesota rules.

BJC:lmb1353

SMITH FOUNDRY WEEKLY INSPECTION REPORT

BAGHOUSE INSPECTION

	Jetson Baghouse		AAF Fabric Filter	
	OK	Problem	OK	Problem
Check all moving parts on discharge system				
Check compressed air lines including line oilers and filters				
Check compressed air supply - pressure, oil, water separators				
Check bag-cleaning sequence to see that all valves are seating properly				
Spot check bags for leaks and holes				
Check fabric cleaning controls				
Check fan drives and electrical motors for wear and lubrication				
Check fans for corrosion, blade wear, temperature, and vibration				
Check hoses and clamps				
Check gaskets on all doors				
Listen for unusual noises				

CYCLONE INSPECTION

	AAF Wet Collector		AAF Cyclone	
	OK	Problem	OK	Problem
Check collectors and duct work for wear, corrosion, air leaks				

OTHER INSPECTIONS

	OK	Problem	OK	Problem
Roof and grounds - Check for visible accumulations				
Check for visible emissions				
Check ductwork for corrosion and leaks				

DESCRIPTION OF PROBLEM

CORRECTIVE ACTION

DATE

Inspector

Date

STATIONARY SOURCE: SMITH FOUNDRY
 LOCATION: Mpls

EMISSIONS SUMMARY

PERMIT NO. 137-91-OT-1
 DATE: 12-26-91

PAGE 6 OF 6
 ENG 6r

PROCESS DESCRIPTION	AIR PROG.	OP SCH	EMIS POINT	REF.	CRITERIA POLLUTANTS, TPY														NC (TPY)		NESHAPS? ODORS? REMARKS
					TSP *		PM-10 *		SOx		NOx		CO		VOC		PB		TOTAL		
					P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	
Furnace	SIP	8760 ^{hr} / _{yr}	1	AP 42 MN Rule	37.14	1.35	37.14	1.29									0.74	0.06			
Sand Mullers	"	"	2	"	15.02	0.54	15.02	0.11													
Sand Silo	"	"	3	"	7.51	0.27	7.51	6.27													
Core oven - core prod.	"	"	4	"	1.04	0.27	1.04	0.27	5.61	0.48	8.76	0.75			0.01	0.00					
Core oven - combustion	"	"	4	"	0.01	0.00	0.01	0.00	0.00	0.00	0.29	0.10	0.06	0.02	0.02	0.01					
Charge Handling	"	"	5	"	10.51	0.90	6.31	0.54													
Shake out	"	"	6	"	22.53	0.05	22.53	0.01							21.02	1.80					
Shot Blasting	"	"	7	"	22.53	0.26	22.53	0.03													
Grinding	"	"	8	"	18.77	0.26	18.77	0.03													
TOTAL, TPY						135.08	3.90	130.84	2.55	5.61	0.48	9.05	0.85	0.06	0.02	21.05	1.81	0.74	0.06		

* based on state rule

Is SARA 313 report required?

EPA SOURCE CLASSIFICATION FOR TOTAL FACILITY (CIRCLE ONE): <u>A1</u> , A2, OR B									
POLLUTANT BASIS: LIST A1, A2, OR B FOR EACH POLLUTANT									
FOR EACH APPLICABLE CASE:				TSP	PM-10	SOx	NOx	CO	Pb
Total Stationary Source				A1	A1	B	B	B	B
Air Program -									
Air Program -									
Air Program -									

Notes and explanations
on reverse side.

cc: John Morrill
with Permit Issuance

Notes and explanations:

1. Air program - PSD

NSPS

SIP (state rules only)

Non-attain.

Identify the air program applicable to each point or emissions unit.

2. Operating Schedule - Hours of operating, load factor percent of capacity, etc.; specify

3. References - 1) Information provided by the Permittee

2) AP-42

3) Stack Test

4) Engineering Estimate

5) Permit limitations

4. P = Potential

A = Actual

TPY = tons per year

NC= Non-Criteria

5. Non-criteria emissions - list total of all TPY

- attach additional detailed information for toxics review

6. EPA Classification - A1, A2, B

1) Identify overall facility classification.

2) Total Facility - Identify the classification of the total facility for each pollutant (for example are TSP emissions A1, A2, or B?).

3) Air Program - For the group of all emissions points/units under a single air program (all NSPS units for instance), identify the classification (A1, A2, B) for each pollutant for that air program. Each air program listed in the detailed listing above should be identified here and the classification identified for each pollutant emitted under that air program.

7. SARA 313 reporting requirements

1) SIC codes 20-39; and

2) ten (10) or more employees; and

3) use more than 10,000 lbs. of a substance or manufacture or process more than 25,000 lbs. of a substance per year.

4) If it appears that the Permittee should be reporting but has not done so, inform emission inventory staff (Kim Sandroek).

SMITH FOUNDRY, Minneapolis, MN

12/26/91

ESTIMATED ACTUAL EMISSIONS

Actual Production Rate = 3000.00 Tons per year

EMISSION POINT - 1

Electric Induction Furnace

Capacity 4.00 TONS/HOUR

	Uncontrolled
TSP	1.35
PM10	1.29
Pb	0.06

EMISSION POINT - 2

Sand Muller

Control - Cyclone

% Efficiency - 90 - TSP, 80 to 85 - PM10

	Uncontrolled	Controlled
TSP	5.40	0.54
PM10	5.40	0.11

EMISSION POINT - 3

Sand Silo

based on sand handling for tons of metal charged

Control - Dry Filter

% Efficiency - 95 to 98

	Uncontrolled	Controlled
TSP	5.40	0.27
PM10	5.40	0.27

EMISSION POINT - 4

Core Oven

based on tons of metal charged, except TSP & PM10

which is based on state rule & actual hours

	Uncontrolled
TSP	0.27
PM10	0.27
SOx	0.48
NOx	0.75
VOC	0.00

based on fuel used

Fuel usage = 2E6 cu. ft. of natural gas

Smith Foundry - Estimated Actual
Emissions p2

	Uncontrolled
TSP	0.00
PM10	0.00
SOx	0.00
NOx	0.10
VOC	0.01
CO	0.02

EMISSION POINT - 5

Charge Handling

based on tons of metal charged

	Uncontrolled
TSP	0.90
PM10	0.54

EMISSION POINT - 6

Casting Shakeout

based on tons of metal charged

Control - Wet type collector

% Efficiency - 99 - TSP, 95 - PM10

	Uncontrolled	Controlled
TSP	4.80	0.05
PM10	3.36	0.01
VOC	1.80	

EMISSION POINT - 7

Wheelabrator

Control - Baghouse

% Efficiency - 99

	Uncontrolled	Controlled
TSP	25.50	0.26
PM10	2.55	0.03

EMISSION POINT - 8

Hand Grinders

Control - Baghouse

% Efficiency - 99

	Uncontrolled	Controlled
TSP	25.50	0.26
PM10	2.55	0.03

SMITH FOUNDRY, Minneapolis, MN

12/26/91

POTENTIAL TO EMIT

Assume: 8760.00 hr/yr

[Using AP-42 dated 9-85 and updated factors EPA 450/4-90-003]

EMISSION POINT - 1**Electric Induction Furnace**

based on 450/4-90-003 for tons of metal charged

Capacity 4.00 TONS/HOUR

	Uncontrolled	Permit Limit
TSP	15.77	37.14
PM10	15.07	37.14
Pb	0.74	

EMISSION POINT - 2**Sand Muller**

based on sand handling (AP-42) for tons of metal charged

Control - Cyclone

% Efficiency - 90 - TSP, 80 - PM10

	Uncontrolled	Controlled	Permit Limit
TSP	63.07	6.31	15.02
PM10	63.07	1.26	15.02

PM10 = controlled TSP * 0.2

EMISSION POINT - 3**Sand Silo**

based on sand handling (AP-42) for tons of metal charged

Control - Dry Filter

% Efficiency - 95 to 98 (use 95%)

	Uncontrolled	Controlled	Permit Limit
TSP	63.07	3.15	7.51
PM10	63.07	3.15	7.51

EMISSION POINT - 4**Core Oven**

based on 450/4-90-003 for tons of metal charged

	Uncontrolled	Permit Limit
TSP		1.04
PM10		1.04
SOx	5.61	
NOx	8.76	
VOC	0.01	

NOTE: The factors for core oven based on tons of cores produced do not include TSP and PM10 so they were not included

EMISSION POINT - 4**Core Oven**

based on 450/4-90-003 for tons of metal charged

based on fuel used

rated heat input = 2 @ 0.350 MMBtu/hr

	Uncontrolled
TSP	0.01
PM10	0.01
SOx	0.00
NOx	0.29
VOC	0.02
CO	0.06

EMISSION POINT - 5**Charge Handling**

based on 450/4-90-003 for tons of metal charged

	Uncontrolled
TSP	10.51
PM10	6.31

EMISSION POINT - 6**Casting Shakeout**

based on 450/4-90-003 for tons of metal charged

Control - Wet type collector

% Efficiency - 99 - TSP, 95 - PM10

	Uncontrolled	Controlled	Permit Limit
TSP	56.06	0.56	22.53
PM10	39.24	0.11	22.53
VOC	21.02	21.02	

PM10 = controlled TSP*0.2

EMISSION POINT - 7**Wheelabrator**

based on 450/4-90-003 for tons of metal charged

Control - Baghouse

% Efficiency - 99

	Uncontrolled	Controlled	Permit Limit
TSP	297.84	2.98	22.53
PM10	29.78	0.30	22.53

EMISSION POINT - 8**Hand Grinders**

based on 450/4-90-003 for tons of metal charged

Control - Baghouse

% Efficiency - 99

	Uncontrolled	Controlled	Permit Limit
TSP	297.84	2.98	18.77
PM10	29.78	0.30	18.77

Smith Foundry
TSP - Determine Permit Limits

This spreadsheet calculates allowable particulate emission rates based on Minnesota Rules parts 7005.0510 (Table 1) and 7005.0520 (Table 2).

Flow rate in standard cubic feet per minute (scfm) is calculated using the ideal gas law and the assumptions of 68 deg. F for standard temperature and 14.78 psia for standard pressure.

Emission Point: Induction Furnace

1. Process Weight Rate (lbs/hour)	Emission Rate (lbs/hour)
8000.000	8.480

Emission Rate (grams/sec)	Emission Rate (tons/year)
1.068	37.140

2. Source Gas Volume (acfm)
3000.000
Percent Moisture
0.000
Outlet Temperature (deg. F)
140.000
Outlet Gauge Pressure (psig)
0.000

Source Gas Volume (dscf/min)	Emission Rate (gr/dscf)	Emission Rate (lbs/hour)
2639.802	0.100	2.263

Emission Rate (grams/sec)	Emission Rate (tons/year)
0.285	9.911

Emission Point: Shot Blaster

Source Gas Volume (acfm)
6000.000
Percent Moisture
0.000
Outlet Temperature (deg. F)
68.000
Outlet Gauge Pressure (psig)
0.000

Source Gas Volume (dscf/min)	Emission Rate (gr/dscf)	Emission Rate (lbs/hour)
6000.000	0.100	5.143

Emission Rate (grams/sec)	Emission Rate (tons/year)
0.648	22.526

Emission Point: Hand Grinders

Source Gas Volume (acfm)

5000.000

Percent Moisture

0.000

Outlet Temperature (deg. F)

68.000

Outlet Gauge Pressure (psig)

0.000

Source Gas Volume
(dscf/min)

5000.000

Emission Rate
(gr/dscf)

0.100

Emission Rate
(lbs/hour)

4.286

Emission Rate
(grams/sec)

0.540

Emission Rate
(tons/year)

18.771

Emission Point: Shakeout

Source Gas Volume (acfm)

6000.000

Percent Moisture

0.000

Outlet Temperature (deg. F)

68.000

Outlet Gauge Pressure (psig)

0.000

Source Gas Volume
(dscf/min)

6000.000

Emission Rate
(gr/dscf)

0.100

Emission Rate
(lbs/hour)

5.143

Emission Rate
(grams/sec)

0.648

Emission Rate
(tons/year)

22.526

Emission Point: Sand Mullors (together)

Source Gas Volume (acfm)

4000.000

Percent Moisture

0.000

Outlet Temperature (deg. F)

68.000

Outlet Gauge Pressure (psig)

0.000

Source Gas Volume
(dscf/min)

4000.000

Emission Rate
(gr/dscf)

0.100

Emission Rate
(lbs/hour)

3.429

Emission Rate
(grams/sec)

0.432

Emission Rate
(tons/year)

15.017

Emission Point: Sand Silo
Source Gas Volume (acfm)
2000.000
Percent Moisture
0.000
Outlet Temperature (deg. F)
68.000
Outlet Gauge Pressure (psig)
0.000

Source Gas Volume (dscf/min)	Emission Rate (gr/dscf)	Emission Rate (lbs/hour)
2000.000	0.100	1.714
	Emission Rate (grams/sec)	Emission Rate (tons/year)
	0.216	7.509

Emission Point: Core Oven
Source Gas Volume (acfm)
321.000
Percent Moisture
0.000
Outlet Temperature (deg. F)
150.000
Outlet Gauge Pressure (psig)
0.000

Source Gas Volume (dscf/min)	Emission Rate (gr/dscf)	Emission Rate (lbs/hour)
277.826	0.100	0.238
	Emission Rate (grams/sec)	Emission Rate (tons/year)
	0.030	1.043

MINNESOTA POLLUTION CONTROL AGENCY
DIVISION OF AIR QUALITYTEAM MEMBER REVIEW REPORT

DATE REQUESTED: 11 / 20 / 91 DATE COMPLETED 11 / 20 / 91

FACILITY NAME: Smith FoundryDAQ NO. 137 ORIGINATOR: BR

Please review the attached document and return to the designated originator within five working days with comments listed below or indicated on the attached document.

I thought the sand miller was controlled
by a wet collector. Let's discuss

draft corrected per discussion w/ N. Ahlstrom 11-26

☒ YES☐ NO

HAVE ALL COMMENTS BEEN INCORPORATED INTO THE
FINAL DOCUMENT? IF NO, THE FINAL DOCUMENT HAS
BEEN AGREED TO BY THE TEAM MEMBER. (TEAM
MEMBER'S INITIALS _____)

FACILITY NAME: Smith Foundry PERMIT OR DAQ FILE #: 137-91-0T-1
FACILITY STREET ADDRESS: 1855 E. 28TH ST
FACILITY CITY/ZIP/CNTY: MINNEAPOLIS 55407 / HENNEPIN
MAILING ADDRESS: Same

TYPE of ACTION

FACILITY INFORMATION

TYPE: Gray Iron Foundry SIC #: 3321

LAER/OFFSET* PSD* VISIBILITY*
NSPS* BACT* NON-CRITERIA*
DISPERSION MODELING REVIEW*

EMISSIONS - Total/Add/Deduct (circle one)
TSP ^{35.06} ~~(4.2)~~ 13.2 SO2 6.61 ~~1.48~~ PM-10 ^{30.86} ~~(2.17)~~ 2.55
NOx 9.05 ~~0.85~~ CO 6.06 ~~0.02~~ HC 6.05 ~~1.81~~
Lead 6.14 ~~0.00~~ TOXICS NOISE ODOR
(Potential/Actual-tpy)

(last signature ✓ date of action)

PQ-00538-05